KNLI-LP – Waller, WA - Facility ID# 197066

Engineering Exhibit – updated Feb 8, 2021
CDBS Application File No. BSTA-20210203AAH

Updates to Engineering Parameters:

- Engineering exhibit for reduced facilities adjusted to **3 watts ERP**.
- Directional antenna pattern include measured field values to 30° azimuth.
- Second-Adjacent Exhibit D/U calculations updated, includes Terrain Profile (V-Soft calculations based on NGDC 30 second terrain data).

COORDINATES (NAD 27)	37 08 09.2 N, 122 07 11.5 W
ELEVATION	120.5 meters
AGL	9 meters
AMSL	129.5 meters
CHANNEL	225 / 92.9 MHz
WATTS	3 watts ERP
DIRECTIONAL ANTENNA	SAM-157 Yagi (30° azimuth; see attached detail)

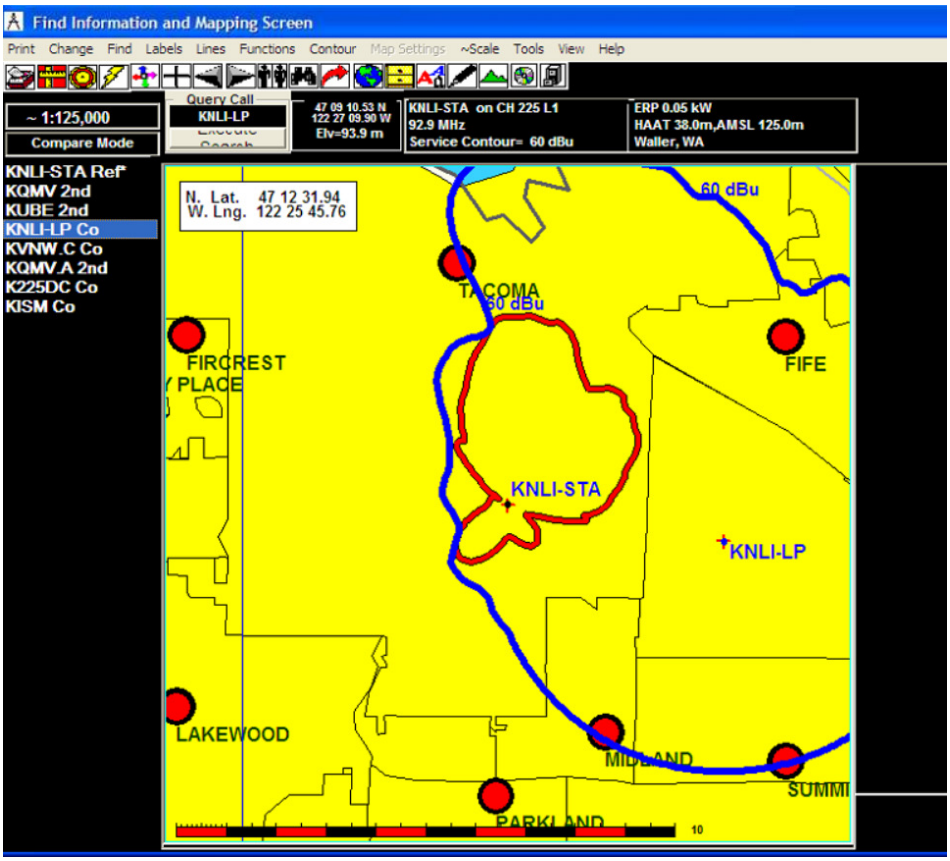
Additional Notes:

At 3 watts ERP, temporary facility will be enclosed within primary 60 dBu f(50,50) contour.

Contour map detail below shows a slight overlap of the 60 dBu contours for the original main licensed contour and the temporary directional antenna at 3 watts ERP.

The tables for calculating f(50,10) and f(50,50) have a known standard deviation of 0.25 dB from the printed curves (see 47 CFR §73.333).

The measured field values for the directional antenna does not exceed this deviation.

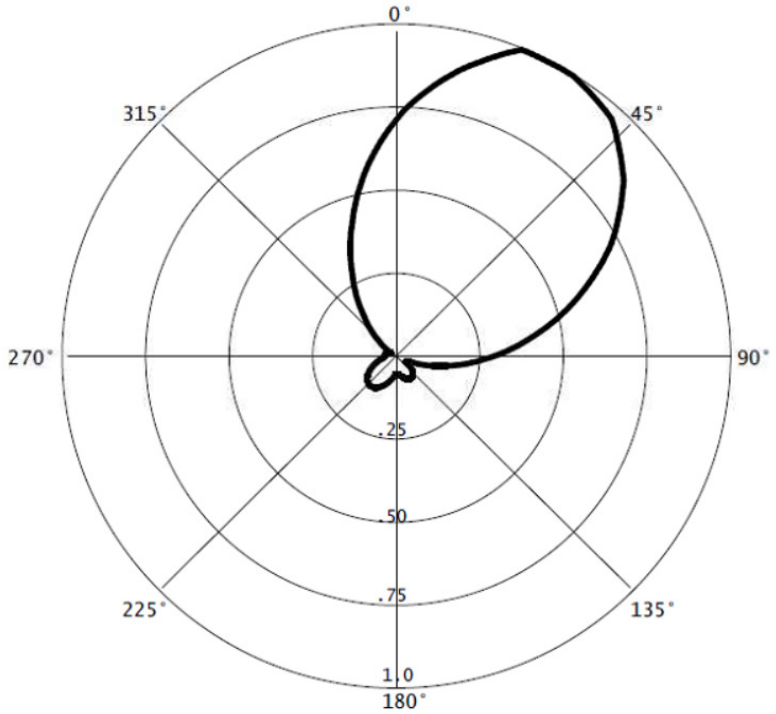


3 w ERP - Antenna pattern – SAM-137 - Measured fields - Rotated to 30 degrees

KNLI-STA 02-06-2021 RMS(V)= .435

Graph is Relative Field

Azi	Field	dBk	kW
000	0.715	-28.138	0.002
010	0.854	-26.598	0.002
020	0.976	-25.438	0.003
030	1.000	-25.229	0.003
040	0.971	-25.483	0.003
050	0.883	-26.308	0.002
060	0.757	-27.651	0.002
070	0.602	-29.637	0.001
080	0.441	-32.336	0.001
090	0.293	-35.891	0.000
100	0.166	-40.848	0.000
110	0.067	-48.656	0.000
120	0.036	-54.055	0.000
130	0.059	-49.871	0.000
140	0.077	-47.499	0.000
150	0.080	-47.167	0.000
160	0.070	-48.277	0.000
170	0.058	-49.901	0.000
180	0.055	-50.390	0.000
190	0.069	-48.402	0.000
200	0.090	-46.163	0.000
210	0.110	-44.401	0.000
220	0.119	-43.732	0.000
230	0.113	-44.183	0.000
240	0.093	-45.822	0.000
250	0.067	-48.656	0.000
260	0.044	-52.439	0.000
270	0.033	-54.754	0.000
280	0.032	-55.126	0.000
290	0.030	-55.803	0.000
300	0.020	-59.122	0.000
310	0.062	-49.381	0.000
320	0.143	-42.098	0.000
330	0.256	-37.057	0.000
340	0.397	-33.257	0.000
350	0.556	-30.321	0.001



Azi	Field	dBk	Azi	Field	dBk
0	0.715	-28.138	180	0.055	-50.39
10	0.854	-26.598	190	0.069	-48.402
20	0.976	-25.438	200	0.090	-46.163
30	1.000	-25.229	210	0.110	-44.401
40	0.971	-25.483	220	0.119	-43.732
50	0.883	-26.308	230	0.113	-44.183
60	0.757	-27.651	240	0.093	-45.822
70	0.602	-29.637	250	0.067	-48.656
80	0.441	-32.336	260	0.044	-52.439
90	0.293	-35.891	270	0.033	-54.754
100	0.166	-40.848	280	0.032	-55.126
110	0.067	-48.656	290	0.030	-55.803
120	0.036	-54.055	300	0.020	-59.122
130	0.059	-49.871	310	0.062	-49.381
140	0.077	-47.499	320	0.143	-42.098
150	0.080	-47.167	330	0.256	-37.057
160	0.070	-48.277	340	0.397	-33.257
170	0.058	-49.901	350	0.556	-30.321

KNLI-LP – Waller / Tacoma, WA - Facility ID# 197066

Second Adjacent Exhibit for Special Temporary Authority - February 2021

Engineering STA is requested to allow for continued operations from interim location pending search for new permanent antenna site.

With an SAM-157 antenna at 3 watts ERP, contour of STA facility is contained within main 60 dBu contour. Height of antenna structure extends 9 meters AGL over structure on the roof of one-story structure on church property. Field values for proposed antenna are attached.

Waiver is requested for second adjacent stations pursuant to Section 73.807(e)(1) with respect to KQMV and KUBE (FM).

Per the attached calculations using FCC 30 Meter Terrain, signal strength at proposed site for KQMV is calculated to 93.66 dBuV/m, and for KQMV (FM) is calculated to 91.83 dBuV/m.

With an additional 40 dBu, KQMV is protected to 131.83 dBu, producing a worst case interference radius of 3.59 meters at the center of radiation, contained at more than 5m above ground. When factoring the characteristics of the SAM-157, a horizontally polarized antenna, results in a negligible amount of interference along the depression angles below the antenna. Using the U/D ratio method, no population will be subject to interference.

FM Model calculations also demonstrate no population is subject to harmful RF exposure.

Export of calculations: KQMV & KUBE signal calculations at reference point

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Study Information:

D/U Ratio Study

Signal Resolution: 0.5 km
Study Date: 2/6/2021

Land Cover was not considered in this study.

Primary Terrain: V-Soft 30 Second US Database
Secondary Terrain: V-Soft 3 Second Alaska Terrain
Coordinate System: NAD27

Transmitters:

Transmitter Information:

Call Letters: KNLI-LP
File Number: BSTA20210203AAH
Latitude: 47-12-31.94 N
Longitude: 122-25-45.76 W
ERP: 0.03 kW
Channel: 225
Frequency: 92.9 MHz
AMSL Height: 129.5 m
Elevation: 120.5 m
Horiz. Antenna Pattern: Directional
Vert. Elevation Pattern: No
Propagation Model: Longley-Rice
Climate: Continental temperate
Conductivity: 0.0050
Dielectric Constant: 15.0
Refractivity: 311.0
Receiver Height AG: 9.1 m
Receiver Gain: 0 dB
Time Variability: 50.0%
Situation Variability: 50.0%
ITM Mode: Broadcast

Transmitter Information:

Call Letters: KQMV
File Number: BLH20060824AEA
Latitude: 47-30-17.33 N
Longitude: 121-58-03.38 W
ERP: 60.00 kW
Channel: 223
Frequency: 92.5 MHz
AMSL Height: 932.0 m
Elevation: 865.3 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No
Propagation Model: Longley-Rice
Climate: Continental temperate
Conductivity: 0.0050
Dielectric Constant: 15.0
Refractivity: 311.0
Receiver Height AG: 9.1 m
Receiver Gain: 0 dB
Time Variability: 10.0%
Situation Variability: 50.0%
ITM Mode: Broadcast

Transmitter Information:

Call Letters: KUBE
File Number: BLH20010206AAA
Latitude: 47-32-40.04 N
Longitude: 122-06-25.97 W
ERP: 100.00 kW
Channel: 227
Frequency: 93.3 MHz
AMSL Height: 512.0 m
Elevation: 442.0 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No
Propagation Model: Longley-Rice
Climate: Continental temperate
Conductivity: 0.0050
Dielectric Constant: 15.0
Refractivity: 311.0
Receiver Height AG: 9.1 m
Receiver Gain: 0 dB
Time Variability: 10.0%
Situation Variability: 50.0%
ITM Mode: Broadcast

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Point Information Report

Latitude: 47-12-31.94 N
Longitude: 122-25-45.76 W

Signal Strength: 91.831 dBuV/m
Elevation: 120.836 m

Distance From Transmitter: 47.954 km
Azimuth From Transmitter: 226.85 degrees

Call Letters: KQMV
File Number: BLH20060824AEA
Latitude: 47-30-17.33 N
Longitude: 121-58-03.38 W
ERP: 60.00 kW
Channel: 223
Frequency: 92.5 MHz
AMSL Height: 932.0 m
Elevation: 865.3 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No

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Point Information Report

Latitude: 47-12-31.94 N
Longitude: 122-25-45.76 W

Signal Strength: 93.663 dBuV/m
Elevation: 120.836 m

Distance From Transmitter: 44.542 km
Azimuth From Transmitter: 213.23 degrees

Call Letters: KUBE
File Number: BLH20010206AAA
Latitude: 47-32-40.04 N
Longitude: 122-06-25.97 W
ERP: 100.00 kW
Channel: 227
Frequency: 93.3 MHz
AMSL Height: 512.0 m
Elevation: 442.0 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No

Elevation Profile

KNLI-LP STA (3 w ERP) vs KQMV (FM)